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| 10/622,558 | 07/18/2003 | Abhijeet Gole | 112056-0099 | 4806 |
| 24267 7590 05/02/2007 CESARI AND MCKENNA, LLP 88 BLACK FALCON AVENUE BOSTON, MA 02210 | | | EXAMINER HUSSAIN, TAUQIR | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|-------------------------------|-----------------------------|--|
| Office Action Summary | Application No. 10/622,558 | Applicant(s) GOLE ET AL. | |
| | Examiner Tauqir Hussain | Art Unit 2152 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>See Continuation Sheet</u> . | 6) <input type="checkbox"/> Other: _____ |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date
:09/17/2003,05/13/2004,01/05/2005,05/05/2006.

DETAILED ACTION

1. Claims 1-28 are pending in this application.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claim 1-2 and 4,6-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Sutherland et al. (Pub. No.: US 2002/0114341 A1), hereinafter "Sutherland".

4. As to claim 1, Sutherland discloses the invention substantially, including, a storage system for use in a storage system cluster, the storage system comprising (Fig.4):

a storage operating system including a cluster connection manager adapted to create, destroy, and maintain one or more communication sessions with a cluster partner (Sutherland, Abstract, lines 12-16, where storage coordinator is cluster connection manager and [0044, lines 1-7, where coordinator manager creates a replication group by selecting nodes means not selecting some other nodes which could be destroying), the cluster connection manager operatively interconnected with a set of

cluster connection manager clients (Sutherland, Fig.4, [0040, lines 1-8], where storage coordinator 12 or cluster 13 could be interpreted as cluster connection manager clients).

5. As to claim 10, Sutherland discloses, the invention substantially, including, a cluster connection manager adapted to manage a set of peer-to-peer connections associated with a set of cluster connection manager clients executing on the storage system (Sutherland, [0040, lines 1-8], where storage coordinator manages the peer-to-peer cluster connections and [0019, lines 1-6], where actual storage process is performed in a peer-to-peer environment).

6. As to claim 2, Sutherland discloses, the invention substantially as in parent claim 1, including, wherein one of the set of communication clients comprises a failover monitor (Sutherland, [0015, lines 6-9, where notebook is a failover monitor).

7. As to claim 4, Sutherland discloses, the invention substantially as in parent claim 1, including, wherein the cluster connection manager is further adapted to perform connection management operations in response to communications from the connection manager clients (Sutherland, Fig.4, [0040, lines 9-16], where storage coordinator with administrative console communicates with its client storage coordinators e.g. element-12 or 13).

8. As to claim 6, Sutherland disclose, the invention substantially as in parent claim 1, including, wherein the cluster connection manager is further adapted to load balance the one or more communication sessions over a plurality of cluster interconnect devices (Sutherland, [0020,, lines 1-8, where storage coordinator implements load balancing among cluster nodes).

9. As to claim 7, Sutherland discloses, the invention substantially as in parent claim 1, including, wherein the cluster connection manager is further adapted to perform a failover procedure for one or more communication sessions from a failed cluster interconnect device to an operational cluster interconnect device (Sutherland, [0015, lines 6-13], where in case of a failure of a cluster node file is being replicated to other nodes and failed node being fixed or become online the files are synchronized with the newly fixed or online node and further peer nodes have been updated of the changes in the cluster).

10. As to claim 8, Sutherland discloses, the invention substantially as in parent claim 1, including, wherein the cluster connection manager is operatively interconnected with a plurality of cluster interconnect devices (Sutherland, Fig.4, [0040, lines 1-8], where storage coordinator associated with administrative console is operatively connected to client storage coordinators 12 or 13).

11. As to claim 9, Sutherland discloses, the invention substantially as in parent claim 1, including, wherein the storage operating system comprises a plurality of cluster connection managers (Sutherland, Fig.4, [0040, lines 1-8], where storage coordinator associated with administrative console is operatively connected to cluster storage coordinators 12 or 13 which could be interpret as connection managers for further nodes attached to them).

12. As to claim 11, Sutherland discloses, the invention substantially as in parent claim 10, including, wherein the set of cluster connection manager clients comprises a failover monitor (Sutherland, [0035, lines 9-12, where failed storage coordinator could be interpret as cluster connection manager client failover monitor).

13. As to claim 12, Sutherland discloses, the invention substantially as in parent claim 10, including, wherein the cluster connection manager is further adapted to perform load balancing of the set of peer-to-peer connections over a plurality of cluster interconnect devices (Sutherland, [0020, lines 1-5], where load balancing has been implemented among a peer-to-peer devices in a cluster environment).

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2152

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claims 5,13-19, 25-26 and 28, are rejected under 35 U.S.C. 103(a) as being unpatentable over Sutherland in view of Meyer et al. (Patent No.: Us 7,203,730 B1), hereinafter "Meyer".

16. As to claim 14, Sutherland discloses, the invention substantially, including, creating an initial connection (Sutherland, [0104, lines 1-3], where new node is added and based on the new addition the process initialized by creating new storage lockers);

exchanging a set of peer connection information (Sutherland, [0113, lines 1-8], where node information is passed to master replication group);

passing a set of client information to the cluster partner (Sutherland, [0113, lines 1-8], where node information is passed to master replication group which, could be cluster partner);

creating a set of appropriate communication ports (Sutherland, [0052, lines 7-16], where, nodes could be interpret as communication ports). However, Sutherland is silent on alerting the cluster partner of a ready status and alerting a set of clients that the cluster partner is in a ready state. Meyer, however discloses, alerting the cluster partner of a ready status (Meyer, Col.13, lines 17-22 and 28-30, where SCSI device manager performs the readiness status to other services which could be cluster partners); and alerting a set of clients that the cluster partner is in a ready state (Meyer, Col.13, lines

28-30, where SCSI device manager performs the readiness status let the client know of ready status).

Therefore, it would have been obvious to one ordinary skilled in the art at the time the invention was made to combine the teachings of Sutherland as applied to claim 1-2 and 4 above with the teachings of Meyer in order to perform functions including discovery, classification, and profiling of storage devices, computer systems, connection elements, and other components relating to a storage area network (SAN).

17. As to claim 5, Sutherland and Meyer discloses the invention substantially as in parent claim 4, including, wherein the communications comprise an application program interface function call (Meyer, Col.3, lines 59-63, where commands could be API function).

18. As to claim 13, Sutherland and Meyer discloses the invention substantially as in parent claim 10, including, wherein the cluster connection manager is further adapted to failover the set of peer-to-peer connections from a failed cluster interconnect device to an operational cluster interconnect device (Sutherland, [0015, lines6-13, where complete fail over process is performed accordingly).

19. As to claim 15, Sutherland and Meyer discloses the invention substantially as in parent claim 14, including, wherein the set of clients comprises a failover monitor process (Sutherland, [0015, lines 6-9, where notebook is a failover monitor).

20. As to claim 16, Sutherland and Meyer discloses the invention substantially as in parent claim 14, including, wherein the set of peer connection information comprises a version number (Sutherland, [0110, line 1], where attribute comprises of version numbers).

21. As to claim 17, Sutherland and Meyer discloses the invention substantially as in parent claim 14, including, collecting, from a set of clients, the set of client information (Sutherland, [0105, lines 3-7], where, creating new replication group means collecting client information); and

transferring the collected set of client information to the cluster (Sutherland, [0105, lines 3-7], where updating the master replication group means transferring the client information to cluster).

22. As to claim 18, Sutherland and Meyer discloses the invention substantially as in parent claim 17, including, wherein the client information comprises a number of communication ports required (Sutherland, [0047, lines 4-8], where minimum number of nodes/ports are assigned to a particular operation).

23. As to claim 19, Sutherland and Meyer discloses the invention substantially as in parent claim 17, including, wherein the set of client information further comprises an

amount of memory requested by a particular client (Sutherland, [0057, lines 1-3], where threshold is set for memory or disk space for a particular node/client).

24. As to claim 25, Sutherland and Meyer discloses the invention substantially, including, a cluster connection manager having means to manage a set of peer-to-peer connections associated with a set of cluster connection manager clients executing on the storage system (Sutherland, Fig.4, [0040, lines 1-8].

25. As to claim 26, Sutherland and Meyer discloses the invention substantially as in parent claim 25, including, wherein the set of cluster connection manager clients further comprises a failover monitor (Sutherland, [0015, lines 6-13, where laptop is a failover monitor).

26. As to claim 28, is rejected for the same rationale applied to claim 25 above.

27. Claims 20-21, are rejected under 35 U.S.C 103(a) as unpatentable over Sutherland and Meyer as applied to claims 1-19 above in view of Craddock et al. (Pub. No.: US 2003/0061296 A1), hereinafter "Craddock".

28. As to claim 20, Sutherland and Meyer disclose the invention substantially as in parent claim 17. Sutherland and Meyer are silent on wherein the step of creating an initial connection further comprises the step of using remote direct memory access

primitives to create the initial connection. However, Craddock discloses, wherein the step of creating an initial connection further comprises the step of using remote direct memory access primitives to create the initial connection (Craddock, Abstract, lines 1-6 and [0033, lines 1-3, where message contains primitive).

Therefore, it would have been obvious to one ordinary skilled in the art at the time the invention was made to combine the teachings of Sutherland and Meyer with the teachings of Craddock in order to provide a distributed data processing system for processing storage I/O in a system area network (Craddock, summary of the invention).

29. As to claim 21, Sutherland, Meyer and Craddock discloses the invention substantially as in parent claim 14, including, wherein the step of creating an initial connection further comprises the step of performing a series of remote direct memory access operations to create the initial connection (Craddock, [0064, lines 1-7], read operation is performed by RDMA and [0065, lines 1-3], where write operation is performed by RDMA therefore, read and write are series of operations performed by RDMA).

30. Claim 22, is rejected under 35 U.S.C 103(a) as unpatentable over Sutherland and Meyer as applied to claims 1-21 and 25-28 in view of Pinto (Patent No.: US 7,099,337 B2)), hereinafter "Pinto".

31. As to claim 22, Sutherland disclose, the invention substantially as applied to claims 1,4 and 6-12 above. Sutherland is silent on alerting a set of clients of an impending termination of the communication session, closing, by the clients, a set of communication ports associated with the communication session and performing an initialization of a peer-to-peer communication session procedure. However, Pinto discloses, alerting a set of clients of an impending termination of the communication session (Pinto, Col.11, lines 8-9, where subnet discovery means alerting or updating client of failed or offline nodes or collecting all the active nodes);

closing, by the clients, a set of communication ports associated with the communication session (Pinto, Col.11, lines 7-8, where switch configuration means closing offline or non-communicative ports); and performing an initialization of a peer-to-peer communication session procedure (Pinto, Col.11, lines 3-7, where subnet 500 will be initialized).

Therefore, it would have been obvious to one ordinary skilled in the art at the time the invention was made to combine the teachings of Sutherland with the teachings of Pinto in order to provide a mechanism at a host node to implement redirection for Class Managers that do not reside on the host node in order to process incoming data messages accordingly in a switched fabric for scalable solutions (Pinto, Abstract).

32. Claims 23-24, are rejected under 35 U.S.C 103(a) as unpatentable over Sutherland and Pinto in view of Gronke (Pub. No.: US 2002/0071386 A1), hereinafter "Gronke".

33. As to claim 23, Sutherland and Pinto discloses, the invention substantially as in parent claim 22. Sutherland and Pinto are silent on wherein the set of communication ports comprises a set of virtual interface connections. However, Gronke discloses, wherein the set of communication ports comprises a set of virtual interface connections (Gronke, Fig.1A, [0020, lines 1-4], where software process communicated using virtual interface).

Therefore, it would have been obvious to one ordinary skilled in the art at the time the invention was made to combine the teachings of Sutherland, Meyer and Pinto with the teachings of Gronke in order to provide automatic failover in a channel-based network. According to an example embodiment, a virtual port to physical port mapper is provided.

34. As to claim 24, Sutherland, Pinto and Gronke discloses, the invention substantially as in parent claim 22, including, wherein the set of clients comprises a failover monitor (Gronke, [0002, lines 7-12, where failover monitor could be an offline node).

35. Claims 3 and 27, are rejected under 35 U.S.C 103(a) as unpatentable over Sutherland and Meyer as applied to the parent claims 1 and 25 above, in view of Chu et al. (Pub. No.: US 2004/0019821 A1), hereinafter "Chu".

36. As to claim 3, Sutherland and Meyer disclose the invention substantially as in parent claim 1. Sutherland and Meyer are silent on wherein one of the set of cluster connection manger clients comprises a non-volatile random access memory shadowing process. However, Chu teaches, wherein one of the set of cluster connection manger clients comprises a non-volatile random access memory shadowing process (Chu, Abstract, where, NVRAM module could be interpret as shadowing process).

Therefore, it would have been obvious to one ordinary skilled in the art at the time the invention was made to combine the teachings of Sutherland and Meyer with the teachings of Chu in order to provide a system and a method for reliable failover involving incomplete redundant arrays of inexpensive disks (RAID) writes in clustering systems (Chu, Abstract)

37. As to claim 27, Sutherland, Meyer and Chu discloses the invention substantially as in parent claim 25, including, wherein the set of cluster connection manager clients further comprises a nonvolatile random access memory shadowing process (Chu, Abstract, where, NVRAM module could be interpret as shadowing process).


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tauqir Hussain whose telephone number is 571-270-1247. The examiner can normally be reached on 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bunjob Jaroenchonwanit can be reached on 571 272 3913. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TH



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